

Chronic calcified subdural hematoma – case report of a rare diagnosis

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Introduction. Chronic calcified/ossified subdural hematoma is a rare diagnosis. The incidence of chronic calcified subdural hematoma is 0.3-2.7% of all chronic subdural hematomas. Surgical treatment is indicated in most cases, but there is still some controversy.

Materials and Methods. We present a case report of 81-year-old woman with calcified chronic subdural hematoma. Patient underwent an osteoplastic left craniotomy, evacuation of chronic subdural mass with careful dissection and successful removal of inner and outer membrane. Postoperative CT scan showed removal of subdural hematoma, decrease of left shift of median line and good brain re-expansion. Postoperative period was without any serious complications.

Results. Subdural hematoma was successfully removed, resulting in a good recovery with complete resolution of patients symptoms. From our experience, we highly recommend surgical treatment in cases of chronic symptomatic calcified subdural hematomas.

Key words: subdural hematoma, ossified, calcified, surgical treatment

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INTRODUCTION

Chronic calcified subdural hematoma is a rare and infrequent diagnosis according to review of the literature. Calcified or ossified subdural mass covering the most of cortical surface is also known as “armoured brain”^{1,2}. First case was reported in 1884 (ref.³). There are only a very few published cases in literature from Europe. The incidence of chronic calcified subdural hematoma is 0.3-2.7% of all chronic subdural hematomas²⁻⁵. In most of cases, surgical treatment is indicated, but there is still some controversy⁶. In this case, we present an older female patient with successful surgical treatment of calcified subdural hematoma.

CASE REPORT

An 81-year-old woman was admitted to the Clinic of Neurosurgery, Martin, SK with a complaint of progressive headache, periods of unconsciousness and weakness of right extremities. There was no report of trauma in patient's recent history. Results of routine laboratory tests were in normal range. Computer tomography (CT) scan revealed an calcified extracerebral subdural mass consisting of hyperdense inner and outer membrane and hypodense central part (Fig. 1). CT scan also demonstrated ventricular dilatation following cerebral atrophy. We made a diagnosis of an calcified/ossified chronic subdural hematoma based on radiological and clinical findings.

Patient underwent an osteoplastic left craniotomy (Fig. 2). After turn down of bone flap and opening the

dura, we found an “stony” outer membrane of calcified/ossified subdural hematoma. Dura was only slightly adhered to fixed outer membrane. Inner membrane was severally adhered to arachnoid membrane. We performed an careful dissection and subdural hematoma with an inner and outer membrane was completely removed. There was a significant brain compression due to subdural mass. Free dural flap was sutured and bone flap was returned. Skin was sutured in anatomical layers. Epidural drain was applied. Postoperative CT scan was made seven days after surgery and showed removal of subdural hematoma, decrease of left shift of median line and good brain re-expansion (Fig. 3) according to level of cerebral atrophy. The membranes were histologically composed of calcified areas, vascular granulation proliferation and fibrous transformation. Postoperative period was without any serious complications and patient was ten days after surgery discharged in neurologically intact condition.

DISCUSSION

Chronic subdural hematoma is defined as collection of blood on the brain's surface, under the outer covering of the brain presenting more than 21 days, usually after injury⁷. History of trauma could be obtained in a majority of cases, however, some cases may occur secondary to intracranial hypotension, overdrainage in hydrocephalus treatment, use of anticoagulants and antiplatelet drugs and coagulation defects. Most common clinical presentation of chronic subdural hematomas could vary from no symptoms to headache, seizures, decreased memory,

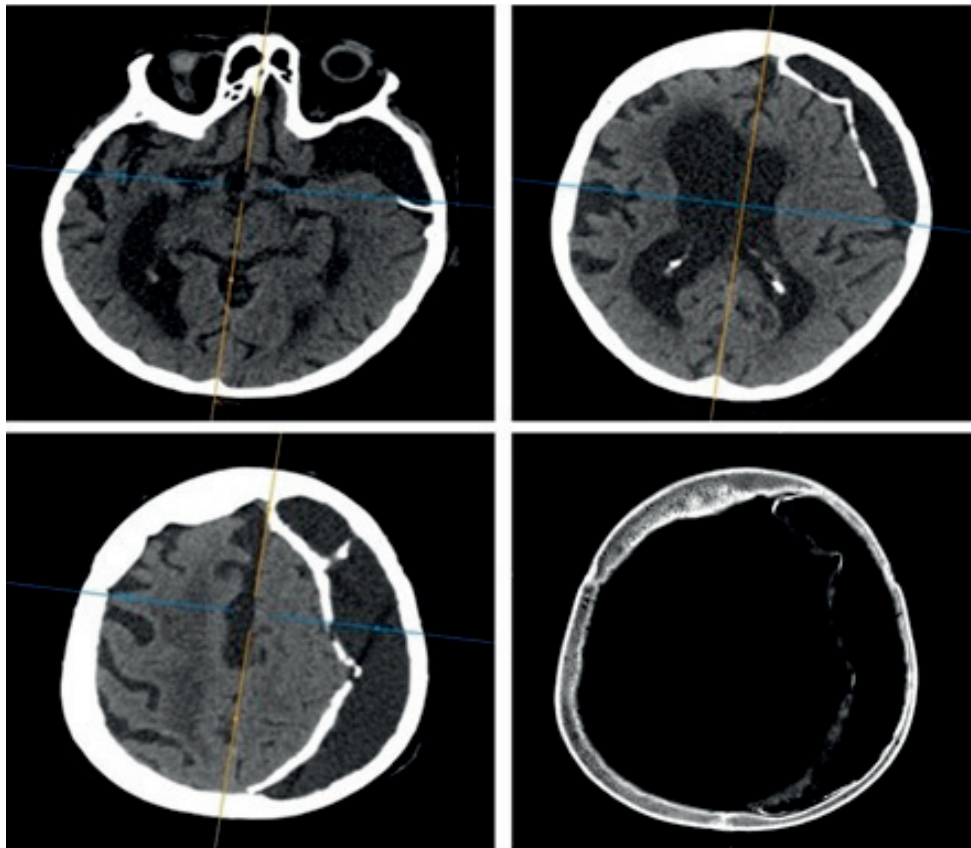


Fig. 1. Preoperative non-contrast brain CT scan (with bony window) showing subdural mass over the left hemisphere with calcified/ossified membranes.

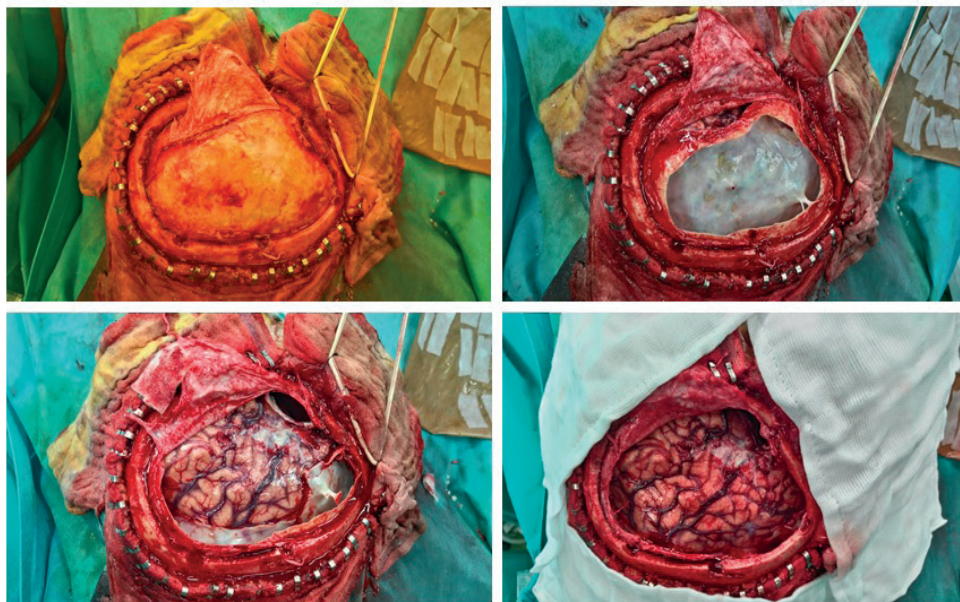


Fig. 2. Intraoperative pictures before and after removal of calcified chronic subdural hematoma.

confusion, difficulty in speech and gait disturbance. In some cases it can lead to hemiparesis or deterioration of consciousness⁶⁻¹³. Chronic calcified hematomas are often characterized by slow progression of neurological symptoms, also they are usually associated with brain atrophy. Instead of increasing availability of magnetic resonance,

computer tomography still remains primary imaging modality for diagnosing chronic subdural hematomas⁸.

Chronic calcified subdural hematoma, in differential diagnosis, can be sometimes confused with calcified epidural hematoma, meningioma, subdural empyema or arachnoid cyst.

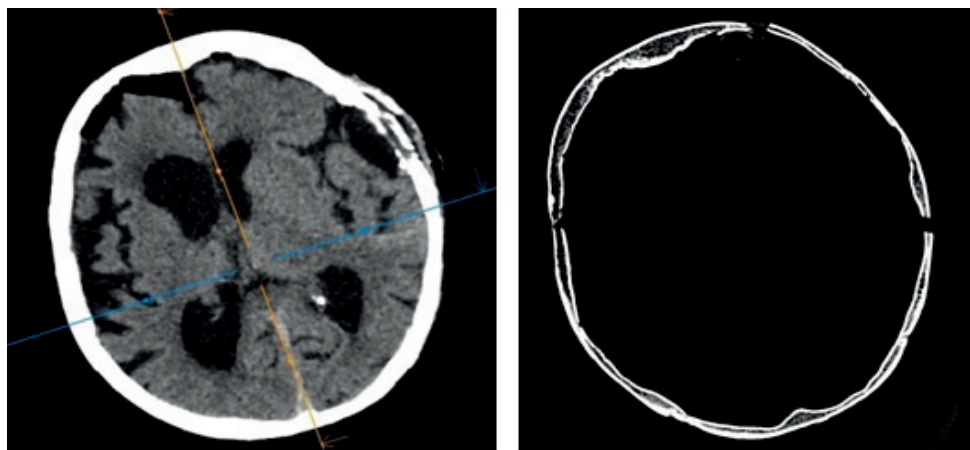


Fig. 3. Postoperative non-contrast brain CT scan (with bony window) seven days after surgery revealing removal of subdural mass with calcified membranes and good brain re-expansion.

The etiology of calcification in chronic subdural hematomas is not exactly defined. Many studies suggest, that metabolic, vascular and local factors, such as poor circulation, absorption in subdural space and intravascular thrombosis, play important role in development of calcification and ossification^{8,10,14}. A few studies observed eosinophilic infiltration in the vascularized and hyalinized granulation tissue of the subdural membrane (removed during surgical procedure). Connective tissue gets hyalinized with calcium deposits under poor circulation of the subdural hematoma content. Microscopic calcium deposits may progress to serious calcification and eventually ossification. Calcification occurs approximately six months after hemorrhage, but this process can be influenced by many different individual factors¹³⁻¹⁵. Calcified subdural hematomas are more frequently reported than ossified. Ossification is considered as the terminal stage of this process⁷.

Conservative treatment is usually indicated in elderly patients with no neurological symptoms. In younger patients, or when a neurologic deficit is present, surgical treatment is widely accepted¹³⁻¹⁹. Removal of subdural ossified mass improves cerebral blood flow, reduces cerebral irritation and usually leads to neurological improvement. Most studies have shown that complete surgical removal of calcified subdural hematoma with craniotomy is beneficial for symptomatic patients with clinical deterioration^{9,10,13,14}. There are a few studies recommending surgical treatment only to middle aged patients, patients with neurologic impairment and children²⁰. The reason to exclude older patients is that some symptoms may be due to cerebral atrophy. Most common postoperative complications after surgery are recurring haemorrhage in the subdural space and bleeding based on insufficient brain expansion following prolonged brain compression, contusion or development of new neurological deficit caused by adhered inner membrane dissection from the brain. Postoperatively should be considered antiepileptic treatment to prevent seizures. Surgical removal of asymptomatic calcified subdural hematoma should be based on

patient age and level of cerebral compression shown by radiological findings²¹.

CONCLUSION

In this case, subdural hematoma was successfully removed, resulting in a good recovery with complete resolution of neurological symptoms. From our experience, as well as from most published findings, we highly recommend surgical treatment in cases of chronic symptomatic calcified subdural hematomas as it usually leads to postoperative improvement with restoration of impaired neurological conditions.

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